

An Annotated Bibliography

on

**APOPLEXY AND OTHER  
DIE-BACK DISEASES  
OF APRICOTS**



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INTRODUCTION

In this list of references various diseases and disorders affecting the main limbs or whole trees and usually terminating in the death of the tree are considered. These conditions are often encountered in apricots growing in Europe, Africa, North America and Australasia [see geographical index at the end of this bibliography].

Symptoms of apoplexy or die-back vary greatly from region to region, and this may help to explain the many names that have been used to describe disorders of this type. In Europe the most frequently used term for the premature death of apricot trees is apoplexy which is commonly applied to various diseases ascribed to a number of different factors. Other terms used in various countries include die-back, wilt, sour sap, black heart, gummosis, decline, *dépérissement*, *Marillensterben* and *mrtvice* (Czech for heart failure).

The factors considered to be responsible for apoplexy or die-back can be broadly divided into 2 groups: (1) Physiological: rootstocks, soil and climatic factors, pruning and other cultural practices; and (2) Parasitic: bacteria, fungi, viruses and pests but not, it would seem (so far), to nematodes. Details of these are given in an "Index of pathogens and other factors" at the end of this bibliography.



REFERENCES IN CHRONOLOGICAL ORDER

1. Cadoret, A.  
L'abricotier dans la Vallée du Rhône.  
(The apricot in the Rhone Valley.)  
J. Agric. Prat., 1922, 86:271.  
[R. A. M., 2:pp. 119-20.]  
For the last 30 years a gummosis of apricot trees, accompanied by the attacks of a hitherto unidentified parasite has been known in the alluvial soil of the Rhone Valley. The average duration of the disease is 2 to 3 years, though it may be fatal within a year in localities exposed to frequent floods.
2. Chabrolin, M.  
Le dépérissement des abricotiers dans la Vallée du Rhône.  
(The dying off of apricots in the Rhone Valley.)  
La Vie agric. et rurale, 1922, 20:415-16.  
[R. A. M., 1:pp. 385.]  
Various methods are being tested with a view to saving the apricot trees of the Rhone Valley, which have been dying in great numbers in recent years.
3. Czarnecki, H.  
Studies on the so-called black heart disease of the apricot.  
Phytopathology, 1923, 13:216-24, illus.  
[R. A. M., 3:pp. 47-8.]  
In 1916 a disease of the apricot manifesting itself in a wilting of the foliage and discoloration of the wood was investigated in California where it had apparently been established for some years. The disease occurred most frequently on 3 to 6-year-old trees heavily irrigated during the summer and intercropped with tomatoes, both younger and older trees, however, being occasionally attacked. A Verticillium sp. was isolated. The results of inoculation experiments on one-year-old branches of a five-year-old seedling apricot gave positive proof of the pathogenicity of the fungus.
4. Chabrolin, C.  
Quelques maladies des arbres fruitiers de la Vallée du Rhône.  
(Some diseases of fruit trees in the Rhone Valley.)  
Ann. Epiphyt., 1924, 10:265-333, bibl. 79, illus.  
[R. A. M., 5:pp. 304-5.]  
During the hot and dry summer of 1921, the apricot died in large numbers, in some orchards mortality reaching 40%. The two principal causes of the death were root rot induced by Armillaria mellea and apoplexy, which is believed to be of physiological origin. The general symptoms of apoplexy are not specific to it alone.
5. Sibilia, C.  
Il deperimento degli albicocchi. (The wilting of apricots.)  
Boll. R. Staz. Pat. Veg., 1926, 6:377-80.  
[R. A. M., 6:pp. 237-8.]  
A disease of apricots characterized by a gradual wilting, has been observed on a large number of trees in Tuscany. This disease apparently closely similar to that described by Czarnecki in California and referred to a species of Verticillium, but in the present case no Verticillium has yet been found. Among fungi isolated from infected tissues one resembled Clasterosporium and is probably C. carpophilum (Coryneum beijerinckii [recently renamed Stigmina carpophila]) to which Chabrolin attributes apoplexy of apricots in the Rhone valley, but in the present instance this fungus causes only a superficial type of infection.
6. Berkeley, G. H.  
Report of the Dominion Field Laboratory of Plant Pathology,  
St. Catharines, Ontario.  
Rep. Dominion Botanist for the year 1926, Div. Bot. Canada Dep. Agric.,  
1927, pp. 59-102, illus.  
[R. A. M., 7:pp. 300-1.]

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6. cont/--

A disease believed to be new to Canada, black heart or Verticillium wilt of apricot was reported. The symptoms of the disease and the cultural and morphological characters of the fungus agree closely with the descriptions of apricot black heart found in California.

7. Dufrénoy, J.

Dépérissement des arbres fruitiers dans le Massif Central.

(The dying off of fruit trees in the Central Massif.)

[Publ.] Clermont-Ferrand, G. Mont-Louis, 1927, pp. 13, illus.

[R.A.M., 6:p.426.]

The gradual dying off of fruit trees may be due to the attacks of various fungi, the most serious damage being caused by soil dwelling organism, e.g. species of Verticillium which have been shown to cause a wilting of apricots in California. In the central region of France apricots are often affected by a wilting of the larger branches during the summer, after having shown a yellowing of the leaves during previous seasons. From the wood of affected stems a species of Verticillium was isolated.

8. Joëssel, P. H.

Quelques maladies de pêcher et de l'abricotier dans la région rhodanienne  
(Some diseases of peach and apricot in the region of the Rhone.)

Prog. Agric. Vitic., 1928, 90:350-3, 370-4.

[R.A.M., 8:p.180.]

The apoplexy type of wilt of apricots is characterized by the sudden death of the branches or the entire tree, usually when the fruits ripen, but this is preceded shortly or some years before by readily distinguishable symptoms. In trees about to succumb the leaves appear with, or even before, the flowers and brown patches are visible in the wood of the trunk and main branches.

9. Chabrolin, C.

Notes et observations relatives aux déperissements de l'abricotier.

(Notes and observations on the dying-off of apricot trees.)

Ann. Epiphyt., 1929, 14:355-76, illus.

[R.A.M., 9:pp.255-6.]

Not all the cases of death of apricot trees can be reduced to a single type of symptom-complex, but the type which is by far the most prevalent is that known as apoplexy. Among the many precursory symptoms, the browning of the phloem tissue of the trunk and main limbs appears to be the most constant and specific. Pathological alterations which are frequently found in the wood of dying trees are believed to be a secondary phenomenon rather than the cause of death, since trees exhibiting clear precursory symptoms of apoplexy, including the brown discoloration of the phloem, may often have the wood of their trunk and branches entirely healthy in appearance.

10. Chabrolin, C.

Les déperissements de l'abricotier. (The die-back of the apricot.)

C. R. Acad. agric. Fr., 1929, 15:583-8.

[R.A.M., 8:p.656.]

The problem is still awaiting solution; views of other workers are considered critically.

11. Rives, L.

Sur les causes du déperissement de l'abricotier par apoplexie.

(On the causes of the dying-off of apricot trees from apoplexy.)

C. R. Acad. agric. Fr., 1929, 15:77-83.

[R.A.M., 8:pp.388-9.]

The author briefly summarizes the views of previous investigators on the apoplexy of apricots in the Rhone Valley and describes his own studies on its aetiology. It is considered probably of bacterial origin. This view is further supported by the absence of the condition in the dry soils and climate of Vaucluse and Bouches-du-Rhône, humidity being important in the development of bacterial diseases.

12. Rives, L.  
Sur les causes de dépérissement de l'abricotier par apoplexie.  
(On the causes of the dying-off of apricot trees from apoplexy.)  
Rev. de Vitic., 1929, 70:73-6.  
[R. A. M., 8:p. 452.]  
A condensed version of the preceding paper.

13. Rosella, E.  
Le dépérissement des abricotiers à Roquevaire.  
(The dying-off of apricots at Roquevaire.)  
Prog. Agric. Vitic., 1929, 92:427-30.  
[R. A. M., 9:p465.]  
The majority of cases of apoplexy studied were directly caused by attacks of the larva of Capnodis tenebrionis, which burrows in the trunk. The comparatively few cases in which the trees showed precursory symptoms before dying were probably due to root rot [Armillaria mellea].

14. Cheney, G. M.  
"Black heart" of apricots in Victoria.  
Aust. J. exp. Biol. Med. Sci., 1930, 7:91-100, illus.  
[R. A. M., 9:p. 728.]  
From apricot trees affected by black heart, the writer isolated a microsclerotial species of Verticillium agreeing with V. alboatrum (V. dahliae of some authors). Negative results followed inoculation of the branches of young apricot trees, but disease symptoms developed after 6-8 weeks in trees inoculated through the roots with a spore suspension of the fungus, which was subsequently reisolated from the infected branches.

15. Goldsworthy, M. C., and Smith, R. E.  
"Sour sap" in trees of the genus Prunus.  
Science, 1930, 71:506.  
[R. A. M., 9p.598.]  
Two distinct forms of the disease have been observed in California, one caused by bacteria (usually entering through wounds) and the other due to the presence of stagnant soil water affecting the roots of young trees. The bacterial form of sour sap is more common and symptoms were reproduced on inoculation of several stone fruits including apricot. The roots are rarely affected, the trunk infection usually ceasing abruptly at soil level and a mass of suckers being sent up from the root.

16. Anon.  
Pathologie végétale. (Plant pathology.)  
Rapport sur le fonctionnement de l'Inst. des Recherche Agron.  
pendant l'année 1930, 1931, 9:411-45.  
[R. A. M., 11:pp. 22-3.]  
Investigations conducted into die-back of apricot trees in the Rhone Valley indicated that necrosis of the wood is frequently an important concomitant of this condition. Numerous observations, mostly on trees 4-12-years-old showed that these lesions were present on nearly all parts of the tree. A tree may be infected from the roots to the twigs or even to the petioles. Isolations from the lesions in the wood showed the presence of Verticillium dahliae in proportions up to 85 per cent.

17. Dowson, W. J.  
The die-back disease of apricots. Preliminary note.  
Tasm. J. Agric., 1931, 2:165-6.  
[R. A. M., 11:p. 311.]  
A serious dying back of both young and old branches has appeared in Tasmania in comparatively young apricot plantations, the cause of which has been traced to the growth into living wood of wound parasites from old pruning cuts. Fruiting bodies of Nectria cinnabarinina have been frequently found associated with this trouble.

18. Faes, H., and Staehelin, M.  
Quelques cas de dépérissement de l'abricotier en Valais.  
(Some cases of dying-off of apricots in Valais.)  
[Pamphl.] Stat. Fed. d'Essais Vitic., Lausanne, [?1931], pp. 6.  
[R. A. M., 11:p. 187.]  
Apricot trees affected by dying-off fall into 3 groups characterized by symptoms of descending order of severity. Among the fungi found in or on the diseased trees were several true parasites, namely species of Clasterosporium, Fusarium, Monilia and Verticillium, but so far no evidence of their pathogenecity in respect of the dying-off disease has been obtained.

19. Joëssel, P. H., and Bordas, J.  
Recherches sur les dépérissement de l'abricotier dans la vallée du Rhône (1927 à 1930). (Researches into apricot die-back in the Rhone Valley (1927 to 1930).)  
Ann. Epiphyt., 1931, 18:325-51, bibl. 50, illus.  
[R. A. M., 11:pp. 791-2.]  
This is a fully documented account of the different forms of die-back to which apricots in the Rhone valley are susceptible. As regards apoplexy, the cause of which has not yet definitely been ascertained, the authors state that no one symptom can be regarded as diagnostic of this condition.

20. Rives, L.  
Nouvelles observations sur l'apoplexie de l'abricotier et de divers arbres fruitiers. (Further observations on apoplexy of the apricot and of various fruit trees.)  
Prog. Agric. Vitic., 1931, 95:88-91.  
[R. A. M., 10:p. 529.]  
An ungrafted apricot tree which in 1928 had been inoculated with bacterial organisms [a bacillus and a coccus], isolated from diseased trees, produced normal growth in 1929 but died suddenly in 1930, presenting all the symptoms typical of apoplexy.

21. Rudolph, B. A.  
Verticillium hadromycosis.  
Hilgardia, 1931, 5:197-353, bibl. 329, illus  
[R. A. M., 10:pp. 757-8.]  
The "hadromycosis" group of plant diseases, which is specifically caused by Verticillium alboatrum and related forms, includes "black heart" of stone fruits. The strain of Verticillium which attacks and kills the tomato in California also readily attacks the apricot.

22. Fiore, M.  
Ricerche sulla causa di una gommosi diffusasi in alcuni frutteti di Torre del Greco. (Researches on the cause of a widespread gummosis in some orchards at Torre del Greco.)  
Bull. Orto Bot. R. Univ. Napoli, [?1932], 10:5-20, illus.  
[R. A. M., 12:pp. 639-40.]  
A brief description is given of a disease of fruit trees (apricots, etc.) which the local growers ascribe to the noxious vapours emitted by Vesuvius or to the very hot rains which occasionally fall in that region. Field observations showed that the trouble usually starts in the youngest twigs, the first symptoms being exudation of gum, followed by die-back of the limbs, and terminating in the death of the whole tree in one or two years at the most. New trees planted in the soil from which a dead one was removed usually perish and this together with discoloration found on roots of diseased trees, led the author to suspect a parasitic origin of the trouble.

23. Harries, J. B.  
Die back of apricot trees in the Barossa district.  
J. Dep. Agric. S. Aust., 1932, 35:1394-5.  
[R. A. M., 11:p. 792.]  
The real causes of which have not yet been established.

24. Schilberszky, K.  
Über die Ursachen der Apoplexie bei den Steinobstbäumen.  
(On the causes of apoplexy in stone fruits.)  
Angew. Bot., 1932, 14:536-51, bibl. 7, and 1933, 15:105-22, bibl. 31.  
[H.A., 3:327 and R.A.M., 12:p.227 and p.575.]  
From observations conducted in Hungary on apricots and other stone fruits the author concludes that apoplexy is a result of gummosis and gummosis alone is a physiological reaction, which may arise as the result of very different ecological factors or conditions of parasitism, in so far as these are capable of inducing changes important to the condition of the cell.

25. Goidànic, G.  
La leptonecrosi dei ciliegi e degli albicocchi.  
(Leptonecrosis of cherries and apricots.)  
Boll. Staz. Pat. veg. Roma, 1934, 14:531-40, illus.  
[R.A.M., 14:pp454-5.]  
Leptonecrosis, it is tentatively suggested, may belong to the virus group of diseases.

26. Săvulescu, T., and others.  
L'état phytosanitaire en Roumanie au cours de l'année 1932-1933.  
(Phytosanitary conditions in Rumania during the year 1932-1933.)  
Inst. Cerc. Agron. al României, 1934, 12, pp. 93.  
[R.A.M., 14:pp. 214-15.]  
Apoplexy of apricots was very widespread and is attributed to (1) external predisposing factors, i.e., adverse weather, unsuitable soil and unsatisfactory cultural conditions, (2) internal predisposing factors, i.e. gum accumulation in the vessels, with resultant asphyxiation, and (3) by weak parasites. It appears at the beginning of summer.

27. Sarejanni, J.A.  
L'apoplexie des arbres fruitiers des environs d'Athènes.  
(Apoplexy of fruit trees in the vicinity of Athens.)  
Ann. Inst. phytopath. Benaki, Greece, 1935, 1(3):45-50.  
[R.A.M., 15:p. 591.]  
A large number of fruit trees, including apricots, are killed off each year during May to August as a result of attack by apoplexy.  
Verticillium albovarium was isolated from the trunks of 5-7-year-old trees; Phytophthora cactorum was associated with the condition in apricot seedlings.

28. Adam, D.B.  
Summary of plant disease records in South Australia for two years ending 30th June 1934.  
J. Dep. Agric. S. Aust., 1935, 38:939-42.  
[R.A.M., 14:p. 559.]  
A fungus has been isolated from apricot trees suffering from progressive gummosis, affecting one limb after another and ultimately reaching the butt where the work of destruction is completed.

29. Waite Research Institute.  
Report of the Waite Research Institute, Glen Osmond, South Australia, 1933-1936, 1937, pp. 182, illus.  
[R.A.M., 16:pp516-17.]  
When infection of apricot trees by gummosis (probably caused by a Cytosporina) has progressed considerably along the branch the leaves wilt, but do not fall, and excision of the affected branch is no longer able to save the tree.

30. Thomas, P.H., and Raphael, T.D.  
Notes on apricot die-back. Circumvention by propagative methods.  
Tasm. J. Agric., 1938, 9:46-9.  
[H.A., 9:1216 and R.A.M., 17:pp. 472-3.]

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30. cont/--

Apricots in Tasmania are often subject to a severe die-back of spurs, branches and not infrequently of the whole tree. It was found that when the trouble occurred in apricots on cherry-plum rootstocks [P. cerasifera] the die-back appeared to stop at the union, while the rootstock may send out innumerable suckers from the roots.

31. Vielwerth, V.

Zpráva o škodlivých činitelích kulturních rostlin v oblasti západního a středního Slovenska. (Report on the agencies injurious to cultivated plants in western and central Slovakia.) [German summary.] Ochr. Rost., 1938, 14:8-16.

[R. A. M., 17:pp. 500-1.]

Apricots were severely attacked by Monilia [Sclerotinia] laxa and M. [S.] fructigena and observations indicated that the condition was an important factor in the death of a very large number of young apricot trees from apoplexy.

32. Vielwerth, V., and Slink-Mezencevová, A.

Pokusy s moniliovou infekci meruněk.

(Experimental infection of apricots with Monilia.) [German summary.] Ochr. Rost., 1938, 14:47-50.

[R. A. M., 17:pp. 536-7.]

Results are presented indicating that Monilia [Sclerotinia] laxa is not the primary cause of apoplexy of apricot trees.

33. Adam, D. B.

A progress report on a gummosis (die-back) disease in South Australian apricot trees.

J. Dep. Agric. S. Aust., 1938, 42:14-29, illus.

[R. A. M., 18:p. 121.]

Further investigations into apricot gummosis associated with a species of Cytosporina in South Australia showed that in advanced infections the death of an affected limb occurs with great suddenness. An apparently healthy, though in reality badly affected, branch may wilt completely in a week, such wilting usually taking place when the tree is growing vigorously and the fruit is half formed. If infection occurs near the top of the tree in 2-3-year-old wood, the branch may wither 15-18 months later; if, however, infection occurs near the butt, many years may pass before sudden collapse.

34. Lona, F.

Nuovi casi di tracheoverticilliosi su Digitalis lanata e Santolina chamaecyparissus. (New cases of tracheoverticilliosis on Digitalis lanata and Santolina chamaecyparissus.) [Latin and English summaries.] Atti. Ist. bot. Univ. Pavia, Ser. IVa, 1939, 9:273-88, illus.

[R. A. M., 19:p. 154.]

The presence of a Verticillium causing tracheoverticilliosis in plants, including apricot, is reported.

35. Czink, -.

Untersuchungen der Marillenkulturen im Kreise Nikolsburg. Ein Beitrag zur Frage des vorzeitigen Marillensterbens. (Investigations on apricots in the Nikolsburg district. A contribution to the problem of premature death in apricots.)

Gartenbauwiss., 1942, 16:490-508, from abstr. Forschungsdienst 1942, Vol. 14, abstr. p. 50.

[H. A., 14:1568.]

Observations are recorded on the relation between health of apricot trees and such factors as rootstock, climate, soil and nutritional conditions.

36. Denham, H., and Wormald, H.

The brown rot disease of the apricot.

J. roy. hort. Soc., 1942, 67:261-3, bibl. 2.

[H. A., 12:1310 and R. A. M., 21:p. 461.]

## 36. cont/--

A cause of die-back in apricot is infection of twigs and branches by the brown rot fungus Monilia cinerea [Sclerotinia laxa].

## 37. Jirak, L.

Über die enzymatischen Vorgänge des Welkens bei jungen belaubten Marillenbäumen. (Enzymatic processes concerned in the wilting of young leafy apricot trees.)

Gartenbauwiss., 1942, 17:18-38, from abstr. Forschungsdienst, 1943, Vol. 15, abstr. p. 37.

[H. A., 14:118 and R. A. M., 22:p. 317.]

The dying of apricots in the Danube valley from so-called heatstroke or apoplexy, is described. The symptoms of this disorder are wilting accompanied by gumming. Enzymatic processes associated with the phenomena were studied. The disease was primarily attributed to infection by Sclerotinia cinerea [S. laxa] and S. fructigena.

## 38. Maier, W.

Ueber ein Zweigsterben der Aprikosen als Folge von Monilia-Fruchtfäule. (On an apricot branch die-back as a sequel to Monilia fruit rot.)

Z. PflKrankh., 1942, 52:91-107, illus.

[R. A. M., 21:p. 460.]

Apricot trees in Geisenheim were observed to be suffering from a destructive die-back of the branches caused by Monilia cinerea [Sclerotinia laxa] and M. [S.] fructigena. In many cases the entire crown of the tree was involved and had to be removed. Infection was found to originate in the fruits, whence the mycelia of the pathogens proceeded through the pedicels into the branches, where it spread through the phloem and xylem, obstructing the supply of water to the leaves by the accumulation of hyphae, formation of tyloses, and the deposition of gum, and causing the cessation of cambial activity or even the dissolution of the cambium.

## 39. New South Wales.

Plant diseases. Notes contributed by the Biological Branch.

Agric. Gaz. N. S. W., 1942, 53:29-32.

[R. A. M., 21:pp. 280-1.]

Diseases recorded for the first time included an apricot bacteriosis, due to an organism as yet unidentified, the symptoms of which consisted in blossom blight, tip wilt, leaf spot and limb canker with gumming.

## 40. Mirzabekjan, R. S., and Avakjan, S. A.

Measures for combating a bacterial wilt of apricot trees. [Russian.] Microbiol. Symp. Acad. Sci. U. S. S. R. Armenian Branch, Biol. Inst., 1943, 1:117-31.

[H. A., 15:556.]

An unidentified bacterial disease was found to cause wilting among apricot trees. Several sprays were tested, among which bordeaux between 0.75% and 2% was the most effective.

## 41. Proebsting, E. L., and Hansen, C. J.

Leaf scorch and die-back of apricots.

Proc. Amer. Soc. hort. Sci. for 1943, 1943, 42:270-4, bibl. 1.

[H. A., 14:120.]

This condition in California is peculiar to apricots on myrobalan stocks. Trees which form scion roots or are inarched with seedling apricot regain their health.

## 42. Boehm, B.

Apricot gummosis. Its spread in the Barossa district.

Aust. Dried Fruits News, 1945, 21(5):14-15.

[R. A. M., 24:p. 455.]

The various theories that have been advanced to explain the etiology of the disease are summarised.

43. Boehm, B.  
Apricot gummosis. Its spread in the Barossa District.  
J. Dep. Agric. S. Aust., 1945, 48:273-5.  
[H.A., 15:565.]  
Probably caused by the fungus Coryneum beijerincki [Stigmina carpophila].

44. New South Wales.  
Plant diseases. Notes contributed by the Biological Branch.  
Agric. Gaz. N. S. W., 1945, 56:113-15.  
[R.A.M., 24:p. 318.]  
In this account on the decline and die-back of deciduous fruit trees bacterial canker of apricots is also mentioned.

45. Young, H. H.  
A method of control of the "gummosis" disease in the apricot tree.  
Aust. J. Sci., 1945, 8:85-6.  
[R.A.M., 25:p. 508.]  
Cutting out, disinfection and sealing of wounds.

46. Lausanne.  
Station fédérale d'essais viticoles et arboricoles et de chimie agricole, à Lausanne et à Pully. Rapport d'activité 1945. (Report for 1945 on the work of the Federal Viticultural and Agricultural Chemistry Experiment Station at Lausanne and Pully.)  
Annu. agric. Suisse, 1946, 47:741-842.  
[R.A.M., 26:pp. 185-7.]  
Apricot die-back assumed a severe form in the canton of Valais in 1944 and 1945. The disorder appears to be occasioned usually by wounds of all sorts, the intervention of fungi, notably Valsa spp. apparently being generally secondary.

47. Mirzabekjan, R. O.  
Bacterial wilt of apricots in the Armenian SSR. [Russian.]  
Proc. Lenin Acad. agric. Sci. U. S. S. R., 1946, No. 5-6, pp. 44-8.  
[H.A., 17:1311.]  
Attributed to bacterial infection and the organism named Bacterium armeniaca

48. D.S.I.R., New Zealand.  
Twentieth Annual Report of the Department of Scientific and Industrial Research, New Zealand [1945-1946], 1946, pp. 110.  
[R.A.M., 26:pp. 229-32.]  
Verticillium dahliae was isolated from wood of wilted apricot trees in various areas of Central Otago, all the affected trees growing on land previously planted with tomatoes.

49. Bremer, H.  
Beobachtungen an Holzpflanzen im Steppenklima von Ankara.  
(Observations on woody plants in the steppe climate of Ankara.)  
[Turkish summary.]  
Rev. Fac. Sci. Univ. Istanbul, Sér B, 1947, 12:9-34, illus.  
[R.A.M., 26:p. 495.]  
Neglect of essential cultural precautions in apricot orchards resulted in die-back or "apoplexy".

50. Husz, B.  
Mikológiai vizsgálatok kajszifákon. (Mycological investigations on a pectic apricot trees.) [English summary.]  
Acta mycol. hung., 1947, 4(1):6-12.  
[R.A.M., 27:pp. 139-40.]  
Fungi were found to be partly responsible for the destructive apricot disease in Hungary known as "apoplexy". Verticillium alboatrum, for instance, was isolated from 2-year-old apricot on myrobalan (Prunus cerasifera) nursery trees with symptoms of leaf wilt, defoliation, and "black heart" of the woody portions of the stem and to a

## 50. cont/--

lesser extent of the roots. It is concluded that V. alboatrum alone suffices to cause the death of young apricot trees, ingress to which may be gained through injuries on the aerial organs. Some secondary pathogens are also mentioned.

## 51. Lausanne.

Rapport d'activité 1947 des stations d'essais viticoles, arboricoles et de chimie agricole à Lausanne et à Pully. (Annual Report of the Lausanne Horticultural Research Station 1947.)

Lausanne, 1948, being reprinted from Landw. Jb. Schweiz, 1948, 62:555-660.

[H.A., 18:3139 and R.A.M., 28:pp. 323-5.]

The most notable symptom of apricot decline in the Valais is the blocking of the conducting vessels by gum, which in every case has its origin in a wound. The necrotic tissue is believed to form a toxic substance affecting cambium activity. Time of pruning had no influence on disease incidence but the application of copper salts to pruning wounds proved very harmful.

## 52. Nicolas, G., and Aggery, B.

La déprérissement de l'abricotier dans la région de Prades.

(The decline of apricot in the Prades region.)

C. R. Acad. Agric. Fr., 1948, 34:252-4.

[H.A., 18:1729 and R.A.M., 27:p. 570.]

Various opinions on the causes of apoplexy in apricots are mentioned and descriptions of original observations are given. No evidence was found of insect injury or fungus infection but there were numerous bacteria in the discoloured tissues. It is thought the trouble is not due to drought or soil conditions, or to the rootstock used, but that too drastic pruning may have allowed the bacteria to enter.

## 53. Renouf, L. R.

Verticillium wilt of apricots.

N.Z.J. Agric., 1948, 77:284.

[H.A., 19:236 and R.A.M., 28:p. 68.]

Caused by Verticillium dahliae and associated with infected tomatoes.

## 54. Goheen, A. C.

Verticillium wilt of apricots in Washington State.

Plant. Dis. Reprt, 1949, 33:99.

[H.A., 19:1935.]

Verticillium alboatrum was isolated from mummies, dead twigs and the wood of the main limb.

## 55. Wade, G. C.

Apricot diseases.

Tasm. J. Agric., 1949, 20:22-9, illus.

[R.A.M., 28:p. 406.]

Notes are given on the symptoms, causes and control of apricot diseases in Tasmania, including: die-back or gummosis usually associated with a Cytosporina, die-back due to a Polystictus, black heart (Verticillium dahliae), bacterial canker (Pseudomonas cerasi var. prunicola) [P. prunicola], and gumming of non-parasitic origin.

## 56. C. S. I. R.

First Annual Report of the Commonwealth Scientific and Industrial Research Organization for the year ended 30th June, 1949, [?1950], pp. 137.

[R.A.M., 30:p. 18.]

A field survey, begun in 1947, of the occurrence of die-back or gummosis of apricot trees caused by Cytosporina sp. in Australia has shown that there are 50% more affected trees in the non-irrigated areas of South Australia and Tasmania, where almost a third have been destroyed or are very badly affected, but fewer in the irrigated part of South Australia.

57. Gayford, G. W.  
Orchard notes.  
J. Dep. Agric. Vict., 1950, 48:169-70.  
[H. A., 20:3147 and R. A. M., 29:p. 464.]  
Black heart of apricot trees is caused by Verticillium sp.; the affected limbs should be removed and the cuts covered with bordeaux paste.

58. Rieuf, P.  
Le dépérissement des abricotiers. I. État des recherches en France et à l'étranger. II. Situation et recherches au Maroc. (Apricot wilt. I. State of researches in France and abroad. II. The situation and researches in Marocco.)  
Fruits et Primeurs, 1950, 20:354-7, 393-5, illus.  
[R. A. M., 30:pp522-3.]  
In the first paper the author recapitulates and classifies the results of researches over many years on the causes of apricot die-back. In the second he states that "apoplexy" has probably long been endemic in Morocco; he has consistently isolated a Verticillium from the vessels, but most of the affected trees appeared to have been badly planted in unsuitable soil, the fungus merely aggravating their debilitated condition. Apricot "apoplexy" in Morocco could be effectively controlled or at least retarded by improved cultural practices.

59. Valenta, V.  
Toxicke produkty metabolizmu Monilia laxa. (A toxic metabolic product of Monilia laxa.) [Russian and English summaries.]  
Ochr. Rost., 1950, 23:205-10.  
[R. A. M., 32:p. 199.]  
On certain media Monilia [Sclerotinia] laxa produces a toxin that causes rapid wilting of apricot plants.

60. Waite Research Institute.  
Report of the Waite Agricultural Research Institute, South Australia, 1943-1947, 1950, pp. x + 109.  
[R. A. M., 30:p. 19.]  
The incidence of apricot die-back or gummosis, associated with a Cytosporina, was found to increase with the age of the trees.

61. Wenzl, H.  
Untersuchungen über die Absterbeerscheinungen an Marille (Prunus armeniaca). (Die-back of apricots.) [English summary 3/4p.]  
PflSch. Ber. Wien, 1950, 4:187-200, bibl. 10.  
[H. A., 20:2462 and R. A. M., 30:p. 171.]  
In a study of apoplexy of apricots no relationship was found between "sudden death" and (a) Monilia [Sclerotinia] laxa incidence; (b) frost damage; (c) mechanical injury; and (d) Cytospora [Valsa] cincta infection. Trees that were to succumb the following year, entirely or partially, showed increased sucker formation from the myrobalan rootstock.

62. Krasiljnikov, N. A., Mirzabekjan, R. O., and Askarova, S.  
The application of antibiotics to some plant diseases. [Russian.]  
Doklady Akad. Nauk SSSR, 1951, 79:1025-7, bibl. 3.  
[H. A., 23:2921.]  
Young and bearing apricot trees infected with Bacterium armeniaca recovered when treated with antibiotics while the untreated trees died.

63. Smith, H. C.  
Verticillium wilt of apricot, gooseberry, strawberry and tomato.  
N. Z. J. Agric., 1951, 83:129-30, illus.  
[H. A., 22:322.]  
Caused by Verticillium dahliae.

64. Adam, D. B., Grace, J., and Flentje, N. T.  
The 'gummosis' or 'die back' disease of apricots.  
J. Dep. Agric. S. Aust., 1952, 55:450-5, illus.  
[R. A. M., 31:p. 497.]  
Recapitulation of the history, symptoms, spread and control of the diseases, usually associated with Cytosporina sp.

65. Adam, D. B., Grace, J., and Flentje, N. T.  
The "gummosis" or "die back" diseases of apricots.  
Tasm. J. Agric., 1952, 23:128-35, bibl. 2, illus.  
[H. A., 22:3609 and R. A. M., 32:p. 681.]  
A disease of apricots in South Australian and Tasmanian orchards causing gummosis and die back is attributed to Cytosporina sp. The most obvious symptom is the progressive dying back of infected branches sometimes accompanied by gumming cracking or cankers.

66. Delmas, H. C.  
Quelques aspects de la culture de l'abricotier en France.  
(Some aspects of apricot growing in France.)  
Fruits d'Outre Mer, 1952, 7:261-70, 311-23, bibl. 51, illus.  
[H. A., 23:132 and R. A. M., 33:pp. 161-2.]  
A description is given of several diseases of apricots in Roussillon. Verticillium dahliae causes a wilt similar to the final stages of apoplexy. Entire orchards may be destroyed by a wilt probably of virus origin, which takes the form of apoplexy on self-rooted trees and those grafted on peach but is much more gradual on apricots grafted on plum.

67. Hesse, C. C., and others.  
Apricot culture in California.  
Circ. Calif. agric. Exp. Stat. 412, 1952, pp. 57, bibl. 13, illus.  
[H. A., 23:134 and R. A. M., 32:pp. 24-5.]  
No control is as yet known for black heart (Verticillium alboatrum) once it has entered the tree.

68. Mirzabekjan, R. G.  
The action of microbe antagonists and their antibiotic substances on a series of stimulators of bacteriosis in agricultural plants. [Russian.]  
Proc. Lenin. Acad. agric. Sci., 1952, 17(5):34-8.  
[R. A. M., 31:p. 621.]  
Two-year-old apricot trees inoculated with Bacterium armeniaca and treated immediately or one to three days later with antibiotic 15 (from actinomycetes) showed little or no infection and developed normally while the untreated trees withered and died comparatively quickly.

69. Berend, I.  
Report on researches of the years 1948-49 and -50, concerning control of apoplectic dieback of the apricot.  
Ann. Inst. Prot. Plant., Budapest, 1952, 5(1950):251-8, from abstr. in Hung. agric. Rev., 1953, 2(2):p. 11.  
[R. A. M., 33:p. 488.]  
Apoplexy of apricot trees was severe in Hungary from 1948 to 1950, causing some 36 to 60% tree losses in some areas. For control it is advisable to plant trees of medium height on level ground and low-stemmed trees or seedlings on hillsides.

70. Bongini, V.  
Segnalazioni fitopatologiche. (Phytopathological records.)  
[English summary.]  
Ann. Sper. agrar., 1953, 7(3):xvii-liv, illus.  
[R. A. M., 34:p. 19.]  
Apricot trees at Finalmarina were affected by a sudden withering of the whole tree resembling "apoplexy" and caused by Verticillium alboatrum.

71. Day, L. H.  
Rootstocks for stone fruits.  
Bull. Calif. agric. Exp. Stat. 736, 1953, pp. 76, bibl. 55, illus.  
[H. A., 23:3822 and R. A. M., 33:pp. 35-6.]  
Includes notes on the influence of the rootstock on the susceptibility of apricot to black heart (Verticillium alboatrum), bacterial canker (Pseudomonas syringae) and other diseases.

72. Crosse, J. E.  
Bacterial diseases of stone fruit trees in Britain. IX. Bacteriosis of apricot.  
Trans. Brit. mycol. Soc., 1953, 36:38-45, bibl. 17, illus.  
[H. A., 23:2812 and R. A. M., 32:pp. 631-2.]  
The relation of bacterial die-back caused by Pseudomonas mors-prunorum to other forms of apricot die-back is discussed. There was no evidence that P. mors-prunorum is responsible for apoplexy, a term widely used to indicate a progressive die-back of mature apricots characterised by a rolling of leaves.

73. Gavrilović, M.  
Apopleksija kajsija i mere za njego otklanjanje.  
(Apoplexy of apricot and methods of preventing it.) [French summary 1 p.]  
Arh. poljopriv. Nauke, 1953, 6(13/14):137-48, bibl. 8, illus.  
[H. A., 24:3580 and R. A. M., 34:p. 604.]  
Observations have shown that premature death of apricot trees in Yugoslavia is mainly due to the condition known as apoplexy, the causes of which are complex. Apoplexy was often found to occur as a result of freezing of the cambium at the base of the trunk. Incidence of frost damage was most frequent under conditions unfavourable for growth and of rootstock-scion incompatibility. The susceptibility of apricot to apoplexy was affected by physiological development, genetic and micro-ecological factors and rootstock.

74. Heyns, A. J.  
Gummosis of stone fruit trees.  
Fmg S. Afr., 1953, 28:34-6, illus.  
[H. A., 23:2825 and R. A. M., 32:p. 436.]  
Apricots show gumming when growing rapidly under moist conditions, but if water-logging occurs this may develop into sudden wilting followed by death, a condition known as "wet feet" or sour sap disease. A gummosis canker disease of apricots appears to be associated with an organism related to Pseudomonas cerasi v. prunicola [P. syringae f. sp. prunicola].

75. Smith, L. C.  
Apricot gummosis investigations. Progress report, 1951-53.  
J. Dep. Agric. S. Aust., 1953, 57:64-5, illus.  
[H. A., 24:1311 and R. A. M., 33:p. 96.]  
Apricot gummosis [associated with Cytosporina sp.] was not controlled by bordeaux spraying. As unpruned trees are almost gummosis-free, modified pruning trials have been started to reduce gummosis losses.

76. Hutton, K. E., and Morschel, J. R.  
Black heart of apricots in N. S. W.  
Agric. Gaz. N. S. W., 1954, 65:364-7, bibl. 2, illus.  
[H. A., 25:331 and R. A. M., 35:p. 109.]  
Black heart or Verticillium wilt of apricots (V. dahliae) has been prevalent in the Murrumbidgee irrigation area and on the Murray river. Wherever apricots were affected by black heart incidence could be associated with previous cultivation of tomatoes or potatoes. Apricots should only be grown on apricot rootstock and not on plum, kept away from tomatoes and never planted on old tomato or potato soil.

77. Berend, I.  
Ujabb adatok a kajszibarackfák verticilliozisos pusztulásához.  
(New data on the destruction of apricot trees by "verticilliosis".)  
Növénytermelés, 1955, 4:285-8, bibl. 11, illus.  
[H. A., 26:2604, and R. A. M., 36:p. 37.]  
Evidence is presented showing that the so-called apoplexy of apricots is caused by Verticillium alboatrum which is present in many young trees but develops symptoms only when a tree is weakened through some other cause such as frost.

78. Blodgett, E. C., and Twomey, J. A.  
Verticillium wilt of orchard trees.  
Proc. Wash. St. hort. Ass., 1955, pp. 146-8, bibl. 4.  
[H. A., 26:2603.]  
Symptoms of wilting in apricot and some other stone fruit trees have been caused by Verticillium alboatrum and V. dahliae. Soil fumigation before planting is an effective preventive measure but after planting cultural measures can only relieve the attack.

79. Bremer, H.  
Pathologische Beobachtungen an Obstbäumen im Trockenklima.  
(Pathological observations on fruit trees in an arid climate.)  
[English summary 24 lines.]  
Z. PflKrankh., 1955, 62:500-14, bibl. 26, illus.  
[H. A., 26:351 and R. A. M., 35:p. 462.]  
Observations made in Turkey included the following: Apoplexy of apricots is due to a variety of conditions among which over-taxing the drought resistance is probably an important factor. As a mass phenomenon it is always associated with a dry climate.

80. Carter, M. V.  
Apricot gummosis - a new development.  
J. Dep. Agric. S. Aust., 1955, 59:178-84, illus.  
[H. A., 26:1561 and R. A. M., 35:p. 376.]  
Investigations have led to the discovery of an air-borne Eutypa spore which develops on gummosis killed apricot limbs and can spread the disease over great distances.

81. Mirzabekjan, R. O.  
Antibiotics for the internal disinfection of shoots. [Russian.]  
Agrobiologija, 1955, No. 2, pp. 130-4, bibl. 3, illus.  
[H. A., 26:2586 and R. A. M., 35:p. 200.]  
Latent infection by apricot wilt, Bacterium armeniaca, was arrested by soaking budwood in streptomycin or grizemin [a Soviet product] solutions at 1:1,000 for 24 or 48 hours.

82. Plock, H.  
Über das Marillensterben. (Apricot die-back.)  
[English, French and Spanish summaries 4-5 lines.]  
Mitt. Klosterneuburg, Ser. B, 1955, 5: 279-82, illus.  
[H. A., 26:1533.]  
The author discussed 4 possible causes of apricot death. Very slow die-back is caused by injuries to branches and trunks. Frost damage can also start die-back. Sudden death may often be caused by unfavourable weather conditions, too vigorous rootstocks, or a serious Monilia [Sclerotinia] attack. In old apricot growing areas soil sickness may cause tree death.

83. Reynaud, J.-B., Jouve, R., and Bruno-Mignot, H.  
Les recherches au sujet du dépérissement de l'abricotier.  
(Investigations on apricot decline.)  
Arboric. fruit., 1955, No. 13, pp. 19-20.  
[H. A., 25:2650.]  
An apricot decline is causing tree losses of up to 7% per annum in the middle Rhône valley. Preliminary investigations show that death is often due to Verticillium sp.

84. Smith, L. C., and Wishart, R. L.  
Minimizing tree losses from apricot gummosis.  
J. Dep. Agric. S. Aust., 1955, 58:450-4, illus.  
[R. A. M., 34:p. 795.]  
A system of modified pruning is recommended to reduce losses from apricot gummosis [associated with Cytosporina sp.].

85. Schad, C., Grente, J., and Arnaud, R.  
Recherches d'arboriculture fruitière de la Station d'Amélioration des Plantes de Clermont Ferrand. II. Le dépérissement de l'abricotier.  
Compte rendu des travaux effectués de 1951 à 1953.  
(Research on fruit tree growing at the Station d'Amélioration des Plantes at Clermont Ferrand. II. Apricot decline. Report on research conducted between 1951 and 1953.)  
Ann. Amél. Plantes, 1955, 5:271-85, bibl. 1, illus.  
[H. A., 26:1524.]  
The major symptom, progressive dieback leading to death in 4-5 years or less, is accompanied by discolouration, leatheriness, rigidity, malformation and curling of the leaves and browning and off-flavour in the fruit. Investigation led to the differentiation of declines due to infections of the roots and the aerial portions and to physiological causes. Control includes the use of resistant clones and soil disinfection with organo-mercury products.

86. Morvan, G., Souty, J., and Bernhard, R.  
Observations relatives au dépérissement de l'abricotier en France.  
(Observations on the decline of the apricot in France.)  
[English summary  $\frac{1}{2}$  p.]  
Tijdschr. PlZiekt., 1956, 62:59-64.  
[included in H. A., 26:3491 and R. A. M., 35:p. 774.]  
The most important symptoms of a disease of unknown cause on apricots are: leaf roll and interveinal chlorosis; browning of the tissue around the stone of the fruit; premature leafing out in winter. A form of sudden death (apoplexy) seems to belong to the range of symptoms. No correlation was found between soil conditions and frequency of the disorder. Transmission experiments suggest that it may be caused by a virus complex.

87. Morvan, G.  
Le dépérissement de l'abricotier. I. Le différentes formes de dépérissement. (The decline of the apricot. I. Different forms of decline.)  
Ann. Epiphyt., 1956, 7:211-27, bibl. 26, illus.  
[H. A., 26:2671g and R. A. M., 36:p. 37.]  
The 3 main forms of decline in the Rhône valley and Roussillon, France, are canker and gummosis; tracheomycoses associated with Verticillium; and growth irregularity described variously as apoplexy and leptonecrosis.

88. Wishart, R. L., and Smith, L. C.  
Apricot gummosis.  
J. Dep. Agric. S. Aust., 1956, 59:212-13, 243, illus.  
[R. A. M., 35:p. 466.]  
Eutypa sp.

89. Wishart, R. L.  
Apricot gummosis. Symptoms, cause, control.  
J. Dep. Agric. S. Aust., 1956, 59:389-98, bibl. 6, illus.  
[H. A., 26:3598x and R. A. M., 35:p. 832.]  
The present state of knowledge is summarised.

90. Carter, M. V.  
Vines aid spread of apricot gummosis.  
J. Dep. Agric. S. Aust., 1957, 60:482-3, illus.  
[H. A., 28:271 and R. A. M., 36:p. 770.]  
Stromata of Eutypa armeniaca, the apricot gummosis fungus, were found on dead branches of vine.

91. Carter, M. V.  
Eutypa armeniaca Hansf. and Carter, sp. nov; an airborne vascular pathogen of Prunus armeniaca L, in southern Australia.  
Aust. J. Bot., 1957, 5(1):21-35, illus.  
[R. A. M., 37:p. 93.]

92. Morvan, G.  
Mise en évidence de l'action d'un virus dans de dépérissement de l'abricotier. (Evidence of the effect of a virus in apricot decline.)  
C. R. Acad. Agric. Fr., 1957, 43:613-14.  
[R. A. M., 37:p. 292.]  
Evidence of transmission of the virus following grafting.

93. Morvan, G.  
Transmission par greffage des symptômes de dépérissement de l'abricotier. (Transmission by grafting of the symptoms of decline in apricot trees.)  
Fruits d'Outre Mer., 1957, 335-9, bibl. 3, illus.  
[H. A., 28:1234 and R. A. M., 37:p. 360.]  
Virus transmission.

94. Wishart, R. L.  
Apricot gummosis.  
J. Dep. Agric. S. Aust., 1957, 60:359-60, bibl. 4.  
[R. A. M., 36:p. 598 and H. A., 27:3338h.]  
In a general note on the control of apricot gummosis [Eutypa sp.] it is reported that over the last 3 seasons the disease has caused the loss of 15% of the trees in Barossa orchards.

95. Berend, S.  
Zur Ätiologie der Aprikosenwelke. (On the etiology of apricot wilt.)  
[English summary.]  
Phytopath. Z., 1958, 33:399-402, illus.  
[R. A. M., 38:p. 154.]  
The pathogen of apricot wilt in Hungary was identified as Verticillium dahliae. First symptoms were a grey-yellowish-green coloration of the leaves, leading to their early shedding. Later there was a marked discoloration of the wood in the trunk and crown. The fungus remains localized in the infected parts of the root, symptoms in the aerial parts of the tree being produced by remote action of toxic substances.

96. Berend, I.  
Néhány új adat a kajszibarackfák irreverzibilis hervadásról (verticilliosis), állati kártevőktől származó és fagyás eredetű hirtelen pusztulásához. (New data on the sudden death of apricot trees caused by irreversible wilting (verticilliosis), animal pests and frost.)  
Magy. tud. Akad. Agrártud. Oszt. Közl., 1958, 14(1-3):135-44, from Hung. agric. Rev., 1959, 8, Abstr. 304.  
[H. A., 30:3560 and R. A. M., 39:p. 723.]  
Symptoms typical of apoplexy in apricots may be caused by wilt (Verticillium dahliae) usually found in association with Fusarium oxysporum, by larvae of Capnodis tenebrionis or Perotis lugubris which attack the roots, or by latent frost injury to the cambium.

97. Mulder, D.  
Plant diseases of economic importance in the Northern Region, United Arab Republic.  
FAO Plant Prot. Bull., 1958, 7(1):1-5.  
[R. A. M., 38:pp. 382-3.]  
Apricot trees in Syria were severely attacked by Verticillium dahliae, which caused partial wilting.

98. Němec, B. (Editor)  
Pestovanie marhúľ a ich predčasné hynutie.  
(The cultivation of apricots and their premature decline.)  
[Russian, German, French and English summaries.]  
Vydavatel'stvo Slovenskej Akadémie Vied Bratislava, 1958,  $9\frac{1}{2} \times 6\frac{1}{2}$  in., pp. 318, bibls, illus.  
[H.A., 29:1989.]  
A collection of articles by different authors on apricot growing with special reference to apoplexy and related problems.

99. Nonveiller, G. (Editor)  
I Kongres stručnjaka za zaštitu bilja. (First congress of plant protection specialists.)  
Zasht. Bilja, 1958, No. 47-48, pp. 249.  
[R.A.M., 39:pp. 266-8 and H.A., 30:186.]  
T. Dimitrovski (pp. 241-6, English summary) dealt with apricot apoplexy in Macedonia, resulting chiefly from sudden spells of low temperature. Valsa leucostoma and Verticillium alboatrum, isolated from wilted trees, are probably only secondary.

100. Spurling, M. B.  
Black heart of apricots.  
J. Dep. Agric. S. Aust., 1958, 62:80-1, illus.  
[H.A., 29:1271.]  
This disease, caused by Verticillium sp., may be recognised by a black ring in the cross section of the lateral limbs and partial defoliation.

101. Wurgler, W., and Staehelin, M.  
Contribution à l'étude du dépérissement de l'abricotier.  
(Contribution to the study of apricot dieback.)  
[German, English and Italian summaries 10-12 lines.]  
Landw. Jb. Schweiz, 1958, 7:503-25, bibl. 56, illus.  
[H.A., 29:1236 and R.A.M., 38:p. 380.]  
The authors describe the winter climate in Valais and examine the effect of frost, pruning and spraying on apricot trees. The damage due to these agents and to various parasites is primarily a tissue necrosis. The necrotic zones disorganize the cambial activity which tends to form, instead of the normal xylem, a spongy parenchyma devoid of vascular bundles, in which a gummosis quickly develops. The gummed tissue contained in the callus, which is formed around the necrotic area, may modify the activity of the cambium and the growth of next year's wood. This contributes to the formation of cankers, which cause the dieback of branches or entire trees.

102. Bovey, R.  
Le dépérissement de l'abricotier en Valais, est-il causé par des virus?  
(Is the degeneration of apricot trees in Valais caused by virus?)  
Rev. romande Agric. Vitic., 1959, 15:44-7, bibl. 6, illus.  
[H.A., 29:3484d and R.A.M., 38:p. 704.]  
Yes, it has been transmitted by grafting.

103. Majerník, O., and Stanová, M.  
Vplyv teploty na niektoré druhy hub so zretelom na predčasné odumieranie marhúľ (Prunus armeniaca L.) (Influence of temperature on some fungus spp. in relation to the premature dying-off of apricot trees.)  
Biológia, Bratislava, 1959, 14:15-27.  
[R.A.M., 39:p. 480.]  
The fungi used in these studies were isolated from the wood of wilting apricot branches or those freshly killed by "apoplexy" and grown on malt agar at 10-30°C. At 10°C. the parasitic activity of Monilia [Sclerotinia] laxa and Trichoderma viride ceased more rapidly in the host than in the culture, where it was maintained for up to 10 days. For Stereum hirsutum and Fusarium sp. the state of the host was the decisive factor in the establishment of infection and development of wilting.

104. Mervan, G., and Castelain, C.  
Le dépérissement de l'abricotier. (Decline of apricot trees.)  
Reprint from Journées fruit. maraîch. Avignon, 1959, pp. 65-74,  
bibl. 3, illus.  
[H. A., 31:2188 and R. A. M., 40:p. 233.]  
Four forms of wilt are distinguished and their symptoms described  
viz. gummosis and canker; rootstock-scion incompatibility;  
verticilliosis (*Verticillium* sp.); and "growth irregularity" described  
as apoplexy. The possibility of virus cause is also entertained.

105. Wishart, R. L.  
Apricot gummosis.  
J. Agric. S. Aust., 1959, 63:110-19, bibl. 6, illus.  
[H. A., 30:3561 and R. A. M., 39:p. 330.]  
Infection by Eutypa [armeniaca] and the symptoms caused are described  
and prophylactic control measures are recommended.

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between wilting toxins and apoplexy is presumed.

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of fungicides to prevent infection of wounds.

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the newly differentiated xylem tissue.

110. Dingley, J. M.  
Eutypa canker of apricots.  
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armeniaca are described and control measures suggested.

111. Dvořák, J.  
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112. Heyns, A. J.  
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A die-back of apricots accompanied by bark cankering in western Cape Province is attributed to Pseudomonas syringae. A similar disease entailing failure to produce leaves in spring, but without the cankers was not associated with pathogenic bacteria.

113. Higgs, A. L.  
The decline of the apricot acreage in Tasmania.  
Tasm. J. Agric., 1960, 31:45-57, bibl. 5, illus.  
[H. A., 30:4827.]  
Die-back (Eutypa) is considered to be one of the main causes of declining production. A method of pruning developed in South Australia is described, which might aid die-back control.

114. Higgs, A. L., and Matthews, C. D.  
Lateral pruning for control of apricot dieback.  
Tasm. J. Agric., 1960, 31:360-6, bibl. 4, illus.  
[H. A., 31:4245.]  
Caused by Eutypa sp.

115. Majerník, O., Lačok, P., and Stanová, M.  
Výzkum toxickej závislosti niektorých agens vo vzťahu k odumieranin marhúľ' (P. armeniaca L.). (Study on the toxic relationships of certain agents in connection with the die-back of apricot trees.)  
Biológia, Bratislava, 1960, 15:32-52, illus.  
[R. A. M., 40:p. 117.]  
Partial or total apoplexy was induced in apricot trees by inoculation with the mycelia of Monilia [Sclerotinia] laxa, Trichoderma viride, Cephalothecium roseum, Cytospora, Fusarium, and Helicoon spp., Stereum hirsutum, and Schizophyllum commune. Both apricots and tomatoes reacted by wilting to filtrates of these spp. and to various inorganic solutions. The several phases of the 'apoplectic' process are traced and the symptoms developing between inoculation and die-back described. Macroscopically visible symptoms, e.g., necroses and loss of chlorophyll from the leaf veins, are interpreted as fore-runners of die-back, but the need of microscope studies for confirmation of the diagnosis is emphasized.

116. Plock, H.  
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Mitt. Klosterneuburg, Ser. B, 1960, 10B:19-21.  
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More recent observations of essentially the same phenomena as described earlier. The possible causes of decline in young, 5-7-year-old trees and older 10-20-year-old trees are considered separately.

117. Sonea, V.  
Contributii critice la studiul pieirii caisului.  
(Critical comments on the study of wilt of apricot.) [Russian and French summaries.]  
Probleme actuale de Biologie și Științe agricole, 1960, pp. 679-82.  
[R. A. M., 41:p. 48.]  
This note deals with causes of apoplexy which has been damaging apricot plantations in Romania for 30 years. The author challenges the view that the disease originates in the myrobalan [Prunus cerasifera var. divaricata] rootstocks used most frequently for apricot in Romania as such grafted trees can reach an advanced age.

118. Summerland.  
Summary Report of Research, Summerland B. C. for 1959, 1960 pp. 35.  
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[H. A., 31:7288 and 32:180.]  
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Grafting mastic is best wound protectant for apricot gummosis control.  
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[H. A., 31:4244 and R. A. M., 40:p.419.]  
Grafting mastic greatly reduced infection of pruning wounds on apricot trees by Eutypa armeniaca.

120. Wade, G. C.  
Apricot diseases in Tasmania.  
Tasm. J. Agric., 1960, 31:242-9, illus.  
[H. A., 31:2180 and R. A. M., 40:p.116.]  
Diseases affecting the main limbs or whole tree are die-back or. gummosis caused by Eutypa armeniaca, black heart caused by Verticillium dahliae and some others of lesser importance.

121. Constantinescu, N., Prică, D., and Doneaud, A.  
Contribuții la studiul gauzelor pieirii premature și rodirii neregulate a caisului. (A contribution to the study of the causes of premature death and irregular fruiting in apricots.) [Russian and French summaries 3/4 p. each.]  
Lucr. ști. Inst. Cerc. horti-vitic., 1959-60, 1961, pp. 213-29, bibl. 20, illus.  
[H. A., 32:4302.]  
Cracks on the trunk and main branches of apricot trees, caused by variations in temperature during late winter and early spring, are considered to be the chief cause of premature death.

122. Erdelská, O.  
Histologické pozorování patologického vädnutia marmule.  
(Histological observations on the pathological wilting of apricot.) [Russian and German summaries.]  
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[R. A. M., 41:p.398.]  
Seedling and orchard trees inoculated with Monilia [Sclerotinia] laxa.

123. Morvan, G.  
Presentation des symptômes de quelques maladies à virus des arbres fruitiers rencontrées en France. (Presentation of the symptoms of some virus disorders of fruit trees encountered in France.) [English summary  $\frac{1}{2}$ p.]  
Tidsskr. Planteavl, 1961, 65(Suppl.) pp. 184-94, illus.  
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Among the disorders described is apricot decline the main cause of which is a virus.

124. Caillavet, H.  
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A short note on apricot decline.

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From abstr. in Phytopathology, 1962, 52:361.  
[R. A. M., 41 (in press).]  
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126. Morvan, G.  
Les maladies à virus de l'abricotier. (Virus diseases of apricot.)  
Stencilled Note presented to 5th European Symposium on Fruit Tree Virus Diseases, Bologna, June 1962, pp. 7.  
A section is included on virus in relation to apoplexy. The symptoms of the virus disorder and their modification by different rootstocks are briefly described.

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